Testing the Rusbult Model of Relationship Commitment and Stability in a 15-Year Study of Heterosexual Couples

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This study tested Rusbult's investment model of relationship commitment and stability using data from both partners of 167 heterosexual couples studied from 1972 to 1987. Multiple regression analyses generally confirmed predictions that rewards and costs account for a significant proportion of the variance in satisfaction and that satisfaction, investments, and quality of alternatives together account for a significant proportion of the variance in commitment. Evidence about the hypothesized mediational role of subjective commitment in predicting the duration of relationships was mixed. Path analyses showed that Rusbult's model provided an adequate fit to the data and that the associations among variables were similar for men and women. The model successfully predicted relationship duration over a 15-year period. Limitations of the model and directions for future research are considered.

Some romances last a lifetime and others end quickly. What determines how long a person remains in a relationship? Caryl Rusbult's (1980, 1983) investment model of commitment draws on interdependence theory (Kelley & Thibaut, 1978; Thibaut & Kelley, 1959) to answer this question about the stability of romantic relationships. According to the Rusbult model, which is depicted schematically in Figure 1, the most immediate predictor of stability is a person's level of subjective commitment to the relationship. Rusbult defines *commitment* as "the tendency to maintain a relationship and to feel psychologically 'attached' to it" (1983, p. 102). Commitment, in turn, is hypothesized to result from three factors—satisfaction, investments, and quality of alternatives.

Satisfaction reflects a person's subjective evaluation of the relationship. A person feels satisfied with a relationship to the extent that it provides high rewards and low costs. Rusbult defines *rewards* as attributes of the relationship and the partner that the person likes or enjoys. Examples are sexual gratification, the partner's physical attractiveness, and the partner's intelligence. *Costs* are attributes of the relationship and the partner that the person dislikes or finds annoying, such as conflict, the financial costs associated with the relationship, and the partner's embarrassing habits. The model further posits that satisfaction is high to the extent that a person's outcomes in the relationship (rewards minus costs) exceed the person's generalized expectations or comparison level. *Comparison level* refers to the subjective standard against which the attractiveness of the relationship is evaluated. This standard is based on past experiences with relationships and comparisons of one's outcomes with the outcomes that similar others receive from their relationships. For example, a woman who has experienced a series of disappointing relationships and sees that her friends have also had unrewarding relationships may expect little from her current relationship. Together, rewards, costs, and comparison level are expected to predict satisfaction.

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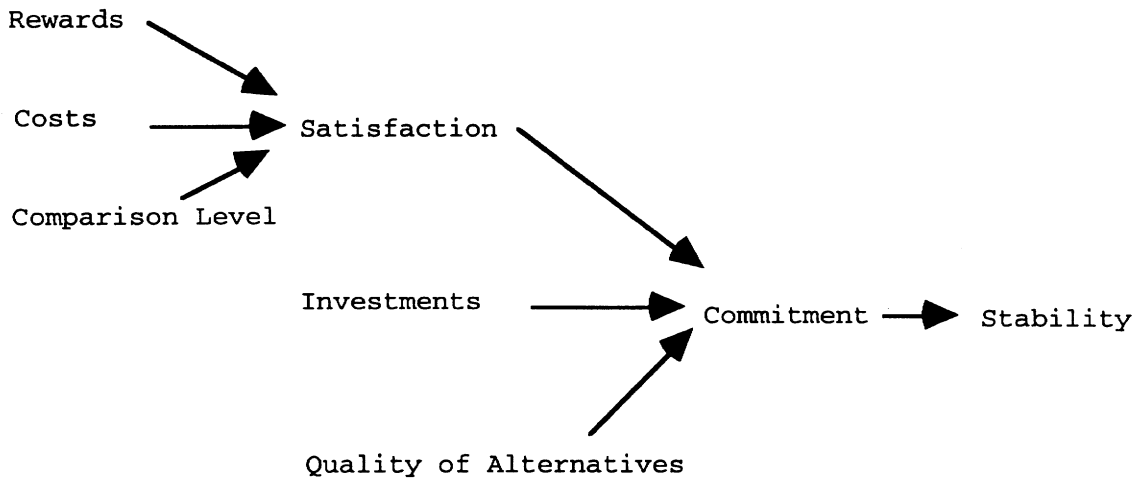

Figure 1 Rusbult's (1983) investment model of relationship commitment and stability.

Although people who are satisfied with their relationship tend to commit themselves to it, there are exceptions to this tendency. There are happy partners who feel little commitment (e.g., the person who wants to date several partners concurrently), and there are unhappy partners who feel strongly committed to their relationships (e.g., the person who feels trapped in a loveless marriage). Thus satisfaction is not the only predictor of commitment. A second crucial determinant of commitment is the *quality of the alternatives* available to a person. This refers to the expected rewards and costs of the best available alternative to the current relationship, whether it be another relationship, spending time with friends and relatives, or solitude. A third predictor of commitment is *investments*, the number and magnitude of resources that are linked to a particular relationship. Examples of investments are time, self-disclosures, and shared material possessions. In summary, a person feels committed to a relationship to the extent that the person is highly satisfied, has poor alternatives, and has made substantial investments in the relationship. As shown in Figure 1, Rusbult posits that commitment mediates the effects of satisfaction, quality of alternatives, and investments on relationship stability. Whereas commitment has a direct effect on relationship stability, the association of the other predictors to stability is "primarily indirect, mediated through the intervening effects of commitment" (Rusbult & Martz, 1995, p. 561).

Rusbult's analysis of commitment and stability differs from those of other theorists in two primary ways. First, although others have discussed the importance of concepts akin to investments (e.g., Becker, 1960; Levinger, 1976), Rusbult gives prominence to the impact of investments on commitment, a feature reflected in her calling her analysis an "investment model" of commitment. Second, Rusbult explicitly considers the interrelationships among key variables. Specifically, she hypothesizes that the effects of satisfaction, quality of alternatives, and investments on relationship stability are largely indirect, mediated by the effects of commitment.

Rusbult and her colleagues have tested these predictions in cross-sectional studies of past and ongoing relationships of college students (Rusbult, 1980), heterosexual adults (Rusbult, Johnson, & Morrow, 1986), and homosexual adults (Duffy & Rusbult, 1986). Rusbult also conducted a 7-month longitudinal study of college dating relationships (Rusbult, 1983) and followed 100 women in abusive relationships over a 12-month period (Rusbult & Martz, 1995). In all these studies, self-report measures were used to form an index of each key construct. These indexes were then subjected to multiple regression procedures in tests of specific predictions of the model. Rusbult (1980, 1983) has usually not assessed comparison level because she believes that participants cannot separate their outcomes from their general expectations. In the one study where comparison level was assessed (Rusbult & Martz, 1995), the hypothesized association between comparison level and satisfaction was not tested.

In general, Rusbult's research has supported her predictions about direct effects among variables. Across the five studies cited above, rewards and costs together accounted for 36% to 76% of the variance in satisfaction. In addition, satisfaction, quality of alternatives, and investments jointly accounted for 25% to 78% of the variance in subjective commitment. Less is known about the proposed mediational effects in Rusbult's model. In a recent study, Rusbult and Martz (1995) used analytic

procedures suggested by Baron and Kenny (1986) to test mediation effects and found only modest support for the hypothesis that commitment mediates the effects of satisfaction, quality of alternatives, and investments on relationship stability. The hypothesis that satisfaction mediates the effects of rewards, costs, and comparison level on commitment has not yet been tested.

The primary goal of the present study was to provide an independent test of the Rusbult model. We assessed the model with data from a large sample of heterosexual couples. A major advantage of our data is that they come from both members of 167 couples studied prospectively over a 15-year period. In our study, we tested five predictions from Rusbult's model:

1. The *satisfaction prediction*, which states that rewards and costs are related to satisfaction. (Consistent with Rusbult's prior research, we did not assess comparison level.)
2. The *satisfaction-as-mediator prediction*, which states that satisfaction mediates the effects of rewards and costs on commitment. Although this prediction is an explicit part of the Rusbult model, it has not previously been tested.
3. The *commitment prediction*, which states that satisfaction, investments, and quality of alternatives are related to commitment.
4. The *commitment-as-mediator prediction*, which states that commitment mediates the effects of satisfaction, investments, and quality of alternatives on relationship stability.
5. The *stability prediction*, which states that subjective commitment predicts stability.

To conduct a comparable test of Rusbult's model, we followed her definitions of concepts in operationalizing variables and used similar statistical procedures.

A further goal was to evaluate the overall fit of the Rusbult model to our data using path analysis. To date, research on the model has tested individual predictions but has not assessed the overall model. Path analysis provides a way to do this. Path analysis also enabled us to test whether the relations among variables in the model differ for women and men. Because our data included reports from both members of couples, we were able to test possible sex differences in the Rusbult model using male and female observers of the same relationships.

Finally, we expanded on previous work by examining possible interrelations among Rusbult's key variables that are not part of her model. For example, Rusbult emphasizes that commitment mediates the effects of quality of alternatives on stability. However, it is possible that there is also a direct association between these two measures: Better quality of alternatives increases the likelihood that a relationship will end quickly. We also investigated possible dyadic effects, in which one partner's experiences in a relationship affect the other partner's satisfaction or commitment. For instance, would a person's psychological commitment to a relationship reflect not only his or her own quality of alternatives but also the quality of the partner's alternatives?

METHOD

This study used data from the Boston Couples Study, a longitudinal research program begun in 1972. Although the study began before the publication of Rusbult's (1980, 1983) investment model of commitment, it investigated many aspects of interdependence theory. Consequently, measures of all key variables were available.

Participants

The participants were drawn from a larger sample of 231 college-age heterosexual dating couples (see Hill, Rubin, Peplau, & Willard, 1979, for details about the initial recruitment and sample). Virtually all participants (98%) were White. At the beginning of the study, in 1972, the couples had been dating for a mean length of about 9 months, and the modal couple was a sophomore woman dating a junior man. Participants completed several follow-up questionnaires, including a 15-year follow-up in 1987 (see Hill, Peplau, & Rubin, 1976; Peplau, Hill, & Rubin, 1993). The analyses in the current report are based on 167 couples for whom information was available regarding the duration of their relationship over the entire 15-year period.

Measures

In 1972, both members of each couple independently completed identical questionnaires concerning their background, attitudes, and dating relationships. The questionnaire included many questions about participants' subjective assessment of the rewards, costs, and satisfaction they experienced in their dating relationship as well as the quality of their alternatives to the relationship, their investments in the relationship, and their feelings of commitment. Assessment of relationship stability 15 years later was based on data from a follow-up survey mailed to participants in 1987. In constructing measures of key variables, we followed Rusbult's general strategy of creating multi-item indexes by combining responses for several individual items. Below, we describe these measures and report reliabilities for each index. We expected that reliability would be high for the index of satisfaction because it assesses a single underlying dimension. On the basis of prior research (Rusbult, 1983), we also expected that the reliability of our commitment index would be high. In contrast, we did not necessarily expect high reliabilities for measures of rewards, costs, investments, or alternatives. These indexes assess the presence of factors that are not necessarily logically connected. For example, a partner might be intelligent but not physically attractive; in this case, there

TABLE 1: Descriptive Statistics for Rusbult Model Variables by Gender

	Women		*Men*		
1972 Variable	*M*	*SD*	*M*	*SD*	*Potential Range*
Rewards	59.11	6.65	57.53	7.13	8–72
Costs	6.89	4.01	6.51	3.68	0–28
Satisfaction	7.20	1.17	7.09	1.17	1–9
Investments	0.05	2.77	0.00	2.75	–9.16–8.82
Quality of alternatives	0.64	0.84	0.53	0.81	0–3
Commitment	6.41	2.07	6.15	2.52	1–9

NOTE: Except for rewards, no statistically significant differences were found between women and men on any of the 1972 measures (all *p*s > .05, two-tailed paired *t* tests). The investments variable has a negative minimum value because it is based on standardized scores.

would be a high score on one reward but a low score on another. Similarly, a person might invest a good deal of time in a relationship but not necessarily disclose highly personal information to the partner.

Rewards. The sum of eight items was used as an index of rewards. Participants rated their partner's creativity, physical attractiveness, intelligence, and self-confidence on a 9-point scale (1 = *not very* and 9 = *extremely*). Participants also used 9-point scales (1 = *not at all true* and 9 = *completely true*) to indicate whether they experienced the following rewards in their relationship: a sense of belonging, feeling accepted, having a person to depend on, and pleasure in giving to the partner. The reliability of these eight items, as assessed by Cronbach's alpha, was adequate (.69 for women and .71 for men). See Table 1 for summary statistics on this and other indexes used in this study.

Costs. The sum of 14 items was used as an index of relationship costs. Each item assessed the extent to which a particular problem was "likely to lead to difficulties" in the participant's relationship. Examples were living too far apart, differences in backgrounds, conflicting sexual attitudes, and the partner's desire to be independent. Each item was rated on a 3-point scale (0 = *not present in the relationship or not likely to lead to difficulties at all*, 1 = *likely to lead to minor difficulties in the relationship*, and 2 = *likely to lead to major difficulties in the relationship*). The reliability coefficient for these 14 items was adequate (alphas = .67 for women and .63 for men).

Satisfaction. The average of 10 items was used as an index of satisfaction. Participants rated how satisfied they were with their relationship on a 9-point scale (1 = *not satisfied at all* and 9 = *extremely satisfied*). In addition, participants indicated how much they liked their partner on the 9-item version of Rubin's (1970) Liking Scale. Sample items included "I think that (___) is unusually well-adjusted" and "(___) is one of the most likable people I know" rated from 1 = *not at all true* to 9 = *completely true*). The reliability coefficient for the 10 items was high (alphas = .88 for women and .90 for men).

Investments. The sum of five indicators was used as an index of investments. Items included how many months respondents had been dating, how often the partners saw each other (from 1 = *less than once a month* to 5 = *every day*), and whether the couple lived together (1 = *no*, 2 = *yes, some of the time*, or 3 = *yes, most or all of the time*). A fourth item assessed the extent to which the participant's best friends knew the partner (from 1 = *never met* to 4 = *know very well*). A fifth indicator was a self-disclosure scale assessing how much the participants had revealed to their partners on 17 topics (e.g., previous sexual experience, political views, and personal weaknesses). Participants rated each topic on a 3-point scale (0 = *told partner nothing about this aspect*, 1 = *told partner something about this aspect*, and 2 = *informed partner fully or in great detail about this aspect*). The scores for the 17 items were summed to form the self-disclosure score. Because the five investment indicators had very different scales, the scores were standardized before they were summed to form the index of investments. As expected, the reliability coefficient for these items was low (alphas = .42 for women and .43 for men).

Quality of alternatives. This variable was assessed by the sum of three dichotomous items. One item asked whether participants were currently "dating or going out with" anyone other than the partner participating with them in our study. The second item asked whether there was a particular other person whom they might date if they were not dating their current partner. The third item asked whether participants had sexual intercourse with another person (besides their partner in our study) in the past 2 months. Participants answered yes or no to each item, and the sum of yes answers was used as an index of quality of alternatives. The reliability coefficient for these items was low (alphas = .49 for women and .57 for men).

Commitment. Rusbult defines commitment as the tendency to maintain a relationship and to feel psychologically attached to it. On the basis of this definition, the average of four items was used as a measure of commit-

ment. Participants estimated the likelihood of marrying the current partner, from 0 = *0–10%* to 9 = *91–100%*. Three additional items came from the attachment subscale of Rubin's (1970) Love Scale. Each item was rated on a 9-point scale (1 = *not at all true* to 9 = *completely true*). The three items were "If I could never be with (___), I would feel miserable," "If I were lonely, my first thought would be to seek (___) out," and "It would be hard for me to get along without (___)." The reliability coefficient for the four commitment items was moderately high (alphas = .82 for women and .81 for men).

Relationship stability. Assessment of relationship stability was based on a mailed questionnaire completed by the participants in 1987. Participants indicated the current status (together vs. broken up) of their relationship and, if applicable, the date when their relationship ended. Stability was operationalized as the length of the relationship from the time of initial testing in 1972 until the relationship ended or until the 15-year follow-up. Duration could therefore range from a few months (if the couple broke up quickly) to 15 years (if the couple were still together at the time of the follow-up). The 50 couples (30% of the sample) who were together in 1987 were all married. In most cases, reports of relationship length were available from both partners, and their reports were averaged. When information was available from only one partner, that person's response was used. The frequency distribution for relationship duration was not normal. Therefore, this variable was recorded as the square root of relationship duration in years.

It should be noted that our operational definition of relationship stability differed from Rusbult's (1983; Rusbult & Martz, 1995). Rusbult used a dichotomous stay/leave measure: whether or not the person stayed in the relationship at the end of certain time periods (from 3 months up to 1 year). In contrast, we defined stability as relationship duration. Rusbult's definition may be appropriate for short-term longitudinal studies in which there is little variability in actual duration. But for long-term longitudinal studies such as the present one, duration seems more appropriate than a stay/leave dichotomy.

Missing data. The six indexes we used (rewards, costs, satisfaction, investments, quality of alternatives, and commitment) consisted of 44 measures. Twenty-two women (13.2% of the female sample) had a missing score for 1 of the measures, and two women (1.2%) had missing values for 2 measures. Twenty-one men (12.6% of the male sample) had a missing score for 1 measure, five men (3.0%) had missing values for 2 measures, and one man (0.6%) had missing values for 4 measures. When a value for a measure was missing, the same-sex group mean was substituted. For example, if a man omitted one item for the reward index, then the group mean for men for that item was used. This minimized the effects of missing data on the statistical outcomes.

TABLE 2: Testing the Satisfaction Prediction Using Multiple Regression

	Women		*Men*	
Regression Equation	*Beta*	R^2	*Beta*	R^2
Regressing satisfaction on				
Rewards	.68***	.56***	.65***	.54**
Costs	–.13*		–.18**	

NOTE: Standardized regression coefficients are shown.
*$p < .05$. **$p < .01$. ***$p < .0001$.

RESULTS AND DISCUSSION

A primary goal of this study was to conduct an independent test of the Rusbult model. A second goal was to use path analysis to assess the overall fit of the Rusbult model to the Boston Couples Study data and to examine sex differences in the model. A third goal was to uncover possible interrelations among key variables that are not currently specified in Rusbult's model.

Testing the Rusbult Model

In our test of the model, we used Rusbult's definitions to operationalize key constructs and conducted multiple regression analyses similar to those used by Rusbult (1983; Rusbult & Martz, 1995).

Satisfaction prediction. According to Rusbult, satisfaction with a relationship should be related to rewards and costs. Consistent with prior research (Drigotas & Rusbult, 1992; Duffy & Rusbult, 1986; Rusbult, 1980, 1983; Rusbult et al., 1986), we found that satisfaction was significantly correlated with rewards and costs. As shown in Table 2, multiple regression indicated that rewards and costs *together* accounted for 56% and 54% of the variance in satisfaction for women and men, respectively. As Rusbult has predicted, deletion of either variable from the regression model produced a significant reduction in the percentage of explained variance for satisfaction (see beta weights in Table 2). For these couples, happiness in a relationship depended on both positive and negative attributes of the partner and the relationship.

The relative weights of the betas for rewards versus costs might suggest that happiness in a relationship depends more on the positive qualities of the partner and the relationship than on the negative attributes. However, it should be noted that our measures of rewards and costs were not conceptually equivalent. Whereas rewards included both positive qualities of the partner (e.g., self-confidence) and relational benefits

TABLE 3: Testing the Mediating Effects of Satisfaction Using the Baron-Kenny Test

Regression Equation	*Women Beta*	*Men Beta*
1. Regressing satisfaction on		
Rewards	.68****	.65****
Costs	–.13*	–.18**
2. Regressing commitment on		
Rewards	.37****	.43****
Costs	–.16*	–.06
Investments	.16*	.15*
Alternatives	–.31****	–.17**
3. Regressing commitment on		
Rewards	.17*	.15
Costs	–.13*	.02
Satisfaction	.29***	.40****
Investments	.16*	.19**
Alternatives	–.27****	–.18**

NOTE: Standardized regression coefficients are shown.
*$p < .05$. **$p < .01$. ***$p < .001$. ****$p < .0001$.

(e.g., having someone to depend on), costs were operationalized only in terms of relational problems (e.g., conflicting sexual attitudes). Because of this difference, a clear interpretation of the relative importance of rewards and costs in predicting satisfaction cannot be provided.

Satisfaction-as-mediator prediction. Rusbult hypothesizes that satisfaction mediates the effects of rewards and costs on commitment. To test this and later predictions about mediation, we followed the statistical procedures developed by Baron and Kenny (1986). This approach was specifically designed to test mediation effects using multiple regression and was used by Rusbult and Martz (1995) in a recent study. (They used it to test the commitment-as-mediator hypothesis, but they did not test the satisfaction-as-mediator hypothesis with this or any other approach.)

The Baron-Kenny procedure involves three basic steps. First, the hypothesized mediator (satisfaction) was regressed on the predictors (rewards and costs). Second, the criterion (commitment) was regressed on the predictors (rewards and costs). Third, the criterion was regressed on both the predictors and the hypothesized mediator. In addition, because investments and quality of alternatives are predictors of commitment in Rusbult's model, they were added as predictors in the second and third regression equations (where commitment was the criterion). To establish mediation, the following conditions must hold: Rewards and costs must be significantly correlated with satisfaction in the first regression; rewards and costs must be significantly correlated with commitment in the second regression; and satisfaction, but not rewards and costs, must be significantly correlated with commitment in the third regression. The results are shown in Table 3.

The pattern of results suggested that satisfaction mediated the relation between rewards and commitment completely for men and partially for women. For men, rewards were correlated with satisfaction in the first regression and with commitment in the second regression. But rewards were not correlated with commitment in the third regression, whereas satisfaction *was* correlated with commitment. For women, a similar pattern of results was observed, except that rewards remain significantly correlated with commitment in the third regression. Nevertheless, when satisfaction was controlled for, the correlation between rewards and commitment was reduced from beta = .37, $p < .0001$ (in the second regression), to beta = .17, $p < .05$ (in the third regression). This suggests that the relation between women's rewards and commitment was at least partially mediated by satisfaction.

In contrast, the pattern of results suggested that satisfaction did not mediate the relation between costs and commitment. The three Baron-Kenny rules for establishing mediation were not met for either men or women. Indeed, for men, there was no direct relation between costs and commitment in the second regression and, therefore, nothing for satisfaction to possibly mediate in the third regression. For women, the relation between costs and commitment (beta = –16, $p < .05$) in the second regression remained basically the same even when satisfaction was controlled for (beta = –.13, $p < .05$) in the third regression.

In sum, these results suggest that satisfaction mediates the association between rewards and commitment but not the association between costs and commitment. Because this is the first empirical test of the satisfaction-as-mediator prediction, these findings should be considered tentative. Additional tests, preferably with sequential data rather than cross-sectional data and with comparable measures of rewards and costs, are needed before any conclusions can be made about the satisfaction-as-mediator prediction.

Commitment prediction. The Rusbult model asserts that strong psychological commitment to a relationship is associated with high satisfaction, many investments, and poor alternatives. To test this hypothesis, we regressed commitment on these variables (see Table 4). Consistent with Rusbult's prediction, each variable explained a significant amount of the variance in commitment, and deletion of any variable from the regression model produced a significant reduction in the percentage of explained variance for commitment (see the beta weights in Table 4). Together, these three variables explained 48% of the variance in commitment for women and 43% for men. These figures are comparable to those obtained

TABLE 4: Testing the Commitment Prediction Using Multiple Regression

	Women		*Men*	
Regression Equation	*Beta*	R^2	*Beta*	R^2
Regressing commitment on				
Satisfaction	.46***	.48***	.50***	.43***
Investments	.20*		.22**	
Alternatives	−.28***		−.20*	

NOTE: Standardized regression coefficients are shown.
*p < .01. **p < .001. ***p < .0001.

by Rusbult and her colleagues (Duffy & Rusbult, 1986; Rusbult, 1980, 1983; Rusbult et al., 1986; Rusbult & Martz, 1995) Thus intentions to stay in a relationship and feelings of attachment to it depended not only on satisfaction but also on the quality of available alternatives and the extent to which the individual had invested in the relationship.

Commitment-as-mediator prediction. According to Rusbult, commitment should mediate the effects of satisfaction, investments, and quality of alternatives on relationship stability. Again, the Baron-Kenny test of mediation was conducted. First, commitment was regressed on satisfaction, investments, and quality of alternatives. Second, relationship duration was regressed on the three variables. Third, relationship duration was regressed on the three variables and commitment.[1] The results are presented in Table 5 and are discussed in detail below.

Commitment completely mediated the effect of satisfaction on relationship duration for both women and men. Satisfaction was significantly correlated with commitment in the first regression and with relationship duration in the second regression. However, once the effect of commitment was controlled in the third regression, satisfaction had no effect on relationship stability. Thus greater satisfaction indirectly predicted relationship stability through increasing commitment, a finding consistent with recent research on women in abusive relationships by Rusbult and Martz (1995).

The results were less strong for quality of alternatives. Commitment mediated the effect of alternatives on relationship duration for men but not for women. For both sexes, quality of alternatives was correlated with commitment in the first regression and duration in the second regression. For women, however, the correlation between quality of alternatives and relationship duration remained significant in the third regression. In other words, women's quality of alternatives had direct as well as indirect effects on relationship stability, a pattern consistent with the findings of Rusbult and Martz (1995) in their study of abused women.

TABLE 5: Testing the Mediating Effects of Commitment on Relationship Stability Using the Baron-Kenny Test

Regression Equation	*Women* *Beta*	*Men* *Beta*
1. Regressing commitment on		
Satisfaction	.46****	.50****
Investments	.20**	.22***
Alternatives	−.28****	−.20**
2. Regressing stability on		
Satisfaction	.24**	.24**
Investments	−.02	.02
Alternatives	−.27***	−.18*
3. Regressing stability on		
Satisfaction	.07	.13
Investments	−.10	−.03
Alternatives	−.17*	−.14
Commitment	.38***	.21*

NOTE: Standardized regression coefficients are shown.
*p < .05. **p < .01. ***p < .001. ****p < .0001.

No evidence of mediation was found for investments. Contrary to Rusbult's prediction, commitment did not mediate the effects of investments on relationship stability for either women or men. Investments were significantly related to psychological commitment in the first regression, but they had no effect on stability in the second regression (nonsignificant betas for both women and men). Consequently, there was no opportunity for commitment to mediate the effect of investments on relationship duration in the third regression.

How can we explain the lack of association between investments and stability? One possibility is that the types of investments we assessed were not well suited for predicting relationship stability over a long period. We operationalized investments by asking questions about time spent together, self-disclosure, and having friends in common. Such investments are meaningful for dating couples and may predict staying together for short periods, as demonstrated by Rusbult (1983). But these investments may not affect long-term relationship stability. Rather, in predicting the stability of more established relationships, such factors as getting married, having children together, owning joint property, or forsaking career opportunities to preserve the relationship may be more relevant (see Levinger, 1976). Support for this possibility is provided by Rusbult and Martz (1995) in their study of women in abusive relationships. In their sample, prior length of the relationship, being married, and having children predicted staying with an abusive partner during a 1-year period, and this association was partially mediated by subjective commitment. Thus the types of investments relevant to relationship stability may differ as partners progress from casual dating to marriage.

Stability prediction. According to the Rusbult model, commitment should directly predict stability. In the study of

women in abusive relationships, commitment explained 12% of the variance in whether a woman stayed or left the relationship during the 1-year period (Rusbult & Martz, 1995). Although the time period in our study was much longer (15 years), we still found that initial commitment predicted relationship stability: r = .45 for women and r = .32 for men, ps < .001. In other words, women's and men's commitment scores accounted for 20% and 10%, respectively, of the variance in relationship duration. Together, their commitment scores accounted for 21% of the variance in relationship stability during a 15-year period. Thus our study shows that couples' subjective feelings of commitment to a dating relationship can predict relationship stability much later on. Nonetheless, the less-than-perfect prediction of relationship stability clearly indicates that other factors also affect the permanence of a relationship. It should also be noted that levels of commitment can shift over time as changes occur in the quality of the relationship, alternatives, and other investments (Karney & Bradbury, 1995).

Taken together, these results provide reasonably good support for the Rusbult model. Consistent with the earlier work of Rusbult and her colleagues (Duffy & Rusbult, 1986; Rusbult, 1980, 1983; Rusbult et al., 1986), strongest evidence was found for predictions about direct effects. However, we found only partial or mixed support for the mediational hypotheses about satisfaction and commitment. Finally, it is worth noting that our tests of Rusbult's model are limited by the fact that all measures except stability were assessed at a single time point. Clearer support for a sequential model of the interrelations among variables would be provided by a design that permitted measurements of variables at different times—for instance, showing that initial satisfaction, investments, and alternatives affect later commitment, which, in turn, affects subsequent relationship stability.

A Path Analysis Test of the Rusbult Model

Previous studies have tested individual predictions derived from the Rusbult model (as we did in the preceding section) but have not provided a comprehensive evaluation of the entire mode. In this section, we assessed the overall fit of the Rusbult model to our data using path analysis.

Assessing the overall fit of the model. To examine how well the Rusbult model (diagrammed in Figure 1) fit our data, we used the EQS program developed by Bentler (1992). The results of these analyses are presented in Figure 2 (Panel A for women and Panel B for men). The figure shows both the unstandardized and standardized path coefficients for relations specified in the Rusbult model.

As seen in Figure 2, the results replicate the earlier multiple regression analyses. Consistent with the Rusbult model, rewards and costs were correlated with satisfaction; satisfaction, investments and quality of alternatives were correlated with commitment; and commitment predicted relationship stability.

To assess the goodness of fit of a path model to a set of data, researchers often present both the goodness-of-fit chi-square statistic and the comparative fit index (CFI; Bentler, 1992). A chi-square statistic with a p value greater than a standard cutoff, such as .05 or .01 (see Bentler, 1992, p. 93), indicates adequate fit of the model to the data. More specifically, a p value greater than the cutoff suggests that one should *not* reject the null hypothesis that the hypothesized path model fits the data. Values for the CFI can range from 0 (indicating no fit of the hypothesized model to the data) to 1 (indicating a perfect fit). CFI values greater than .90 indicate adequate fit. A main difference between the chi-square statistic and the CFI is that the CFI reflects fit relatively well at all sample sizes (Bentler, 1990, 1992).

Our goal at this point was simply to assess the fit of Rusbult's theoretical model to our data. For women, the fit estimates were $\chi^2(9) = 22.29$, $p = .008$, and CFI = .96. For men, the fit estimates were $\chi^2 = 22.82$, $p = .007$, and CFI = .97. The χ^2 statistics indicated that the Rusbult model was not perfectly specified to fit the data, but the CFI values indicated that the fit was still adequate for a theoretically driven model. LaGrange multiplier tests indicated that the fit of the model to these data could be improved by releasing (i.e., adding) one path for men and a different path for women. When these changes were made, both models had χ^2 statistics with p values greater than .01 and CFIs = .98. However, our goal for this analysis was to test the Rusbult model rather than to modify it. Consequently, we have not shown these changes in Figure 2. At this point, it is reasonable to conclude that Rusbult's theoretical model offers an adequate but not optimal fit to our data. We will return to the possibility of modifying the Rusbult model in a later section.

Examining gender differences. In studies of heterosexual relationships, the possibility of significant gender differences merits investigation. The best approach to testing gender effects is to examine responses from both partners in couples, thus controlling for possible gender bias when individual male and female volunteers report on different relationships. The men and women in this sample were highly similar in their overall assessments of the quality of their relationship (see Table 1). No significant mean differences were found in men's and women's reports of commitment, quality of alternatives, investments, satisfaction, or costs. Only for rewards was a statistically significant but very small average difference found, with women reporting slightly more rewards than men.

Our data permitted us to investigate systematically whether the strength of the associations (i.e., the magni-

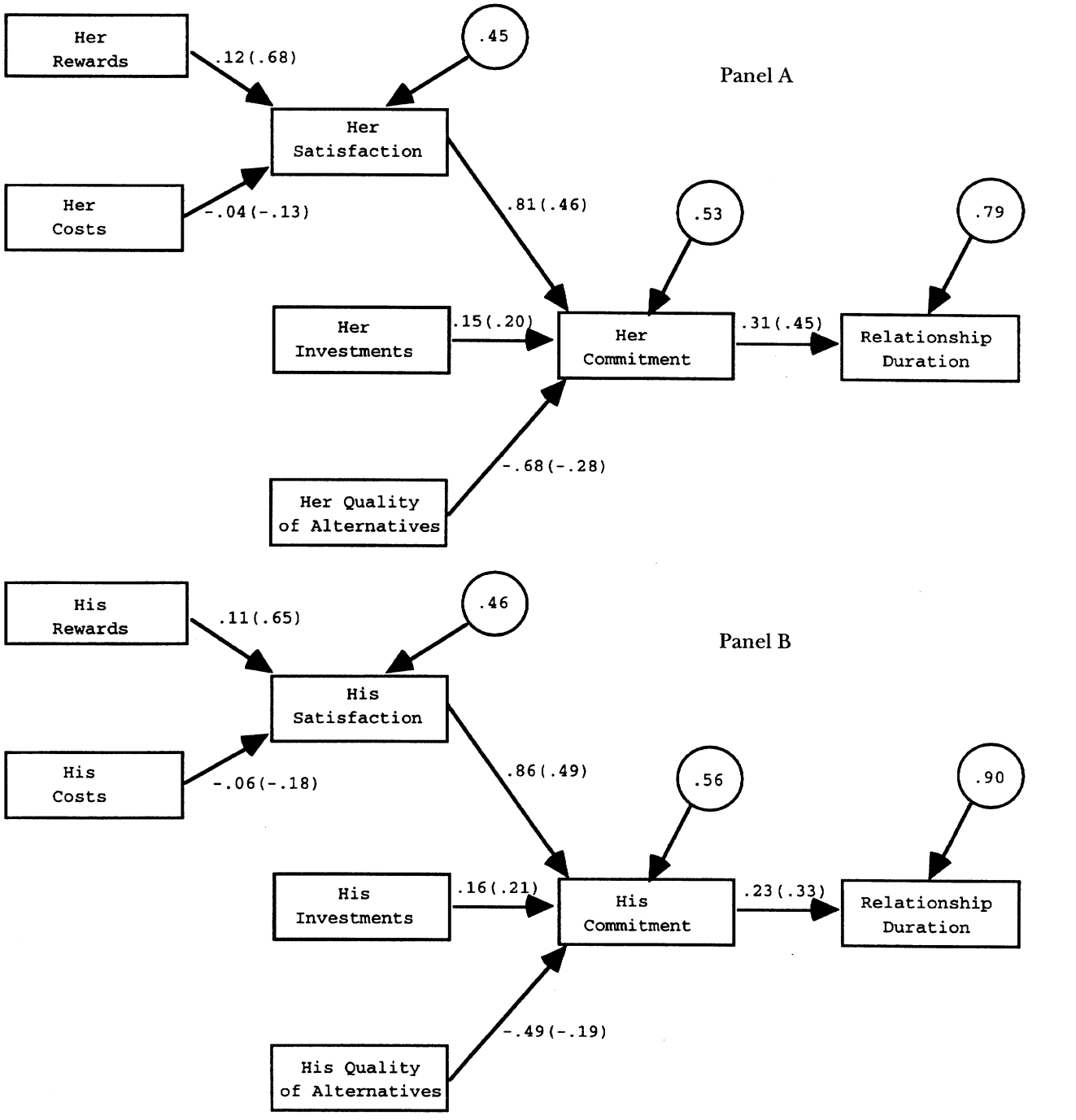

Figure 2 Panel A: Testing the fit of the Rusbult model to data for women using path analysis. Panel B: Testing the fit of the Rusbult model to data for men using path analysis.

NOTE: The independent (exogenous) variables in these path models (rewards, costs, investments, and quality of alternatives) were allowed to covary (i.e., the correlations were estimated as free parameters); for ease of reading, however, the correlations are not represented in these figures. Circled numbers indicate the proportion of error variance in the variables to which they are attached. Arrows represent regression paths. For Panel A, χ^2 (9) = 22.29, p = .008, CFI = .96, For Panel B, χ^2(9) = 22.82, p = .007, CFI = .97. All path coefficients are significantly different from zero ($p < .05$). Standardized path coefficients are presented in parentheses. N = 167.

tude of the path coefficients) between the variables in the Rusbult model differed for women and for men reporting on the same relationship. For this analysis, shown in Figure 3, we included both male and female

partners' measures of key variables and used the couple as the unit of analysis. Further, we constrained identical paths for men and women (e.g., from rewards to satisfaction) to be equal. Six such constraints were imposed in testing the model of no gender differences. These are shown in Figure 3. Note that the unstandardized coefficients of paths constrained to be equal take on the same value. However, the standard coefficients of paths constrained to be equal may take on slightly different values. This is an unfortunate feature of the standardized solution of EQS (see Bentler, 1992, p. 98). Nevertheless, they are presented so the reader can gauge the relative magnitude of the relations depicted in Figure 3.

The chi-square statistic for the path model with the six constraints, $\chi^2(42) = 106.07$, $p < .001$, indicated that the model was not perfectly specified. However, the CFI of .93 indicated that the fit was adequate. In addition, LaGrange multiplier tests indicated that all six constraints were reasonable. Not surprisingly, when the six constraints were actually removed, the fit estimates hardly changed, $\chi^2(36) = 100.46$, $p < .001$, and CFI = .93. Of greater interest, a chi-square difference test confirmed that the fit of the constrained model did not differ significantly from the fit of the unconstrained model, $\chi^2(6) = .094$, *ns*. These results provide strong evidence for no gender differences in the relations among the variables in the Rusbult model.

Expanding the Rusbult Model

Up to this point, we have considered only relations among variables explicitly specified by Rusbult. In this sense, we have been testing a relatively narrow interpretation of her model. In a final set of analyses, we sought to expand Rusbult's model in two ways. First, we tried to identify additional associations among variables within each individuals's assessment of his or her relationship. For example, we investigated whether perceived costs had a direct link to commitment that was not mediated by satisfaction. Second, we tried to identify dyadic associations between the partners' measures. For instance, we examined whether one partner's quality of alternatives might affect the other partner's psychological commitment. Uncovering such associations provides a more detailed account of the complex web of interconnections among various relationship constructs.

We used several guidelines in our efforts to expand the Rusbult model. Because we found that the original Rusbult model did not differ by gender in our sample, and to minimize the possibility of finding spurious relations among variables for either gender, we determined that any new paths to be added to the model should be added for both genders. That is, to be included in a modified model, new parallel paths for women and men that are constrained to be equal must be significantly different from zero. Our general approach was to begin with the model depicted in Figure 3 and then to use results of LaGrange multiplier tests to see which new paths should be added.

Following this approach, four new paths (two pairs of parallel paths) were added: (a) the path from her rewards to her commitment and the path from his rewards to his commitment and (b) the path from her quality of alternatives to his commitment and the path from his quality of alternatives to her commitment. We examined whether the path coefficients of the two new pairs of paths were equal in magnitude. We constrained parallel new paths to be equal and ran a path model with these two new constraints and the original six constraints. This new path model is depicted in Figure 4. The results indicated imperfect but adequate fit of the modified model to the data, $\chi^2(40) = 81.05$, $p < .001$; CFI = .95. When the constraints of equality were released for the two new pairs of parallel paths, the fit estimates hardly changed, $\chi^2(38) = 79.54$, $p < .001$; CFI = .95. A chi-square difference test confirmed that the fit for the constrained model did not differ significantly from the fit of the unconstrained model, $\chi^2(2) = 0.76$, *ns*.

More important, the new constrained model depicted in Figure 4 fit the data better than the constrained model depicted in Figure 3, as indicated by a chi-square difference test, $\chi^2(2) = 12.51$, $p < .005$. This finding suggested that two modifications of the Rusbult model may be warranted. First, rewards may relate directly to commitment. This relation is consistent with an interdependence perspective on relationships and with the general approach taken by Rusbult. However, it is not strictly in line with the original Rusbult model, which predicts that rewards are linked to commitment only indirectly, via satisfaction.

Our results also suggested adding a second, dyadic relation between the Rusbult model variables. The quality of alternatives to a current relationship experienced by one partner may be related to the other partner's level of commitment. One possible interpretation is that individuals who know that their partners have good alternatives may restrain their commitment to the relationship (South & Lloyd, 1995). Another possibility is that individuals who perceive weak commitment on the part of their partner may actively pursue better alternatives elsewhere. The correlational nature of our data does not permit us to decide definitively among these or other possible interpretations. However, results of this nature underscore the importance of looking at ways in which one person's experiences in a relationship affect the partner's experience of the same relationship.

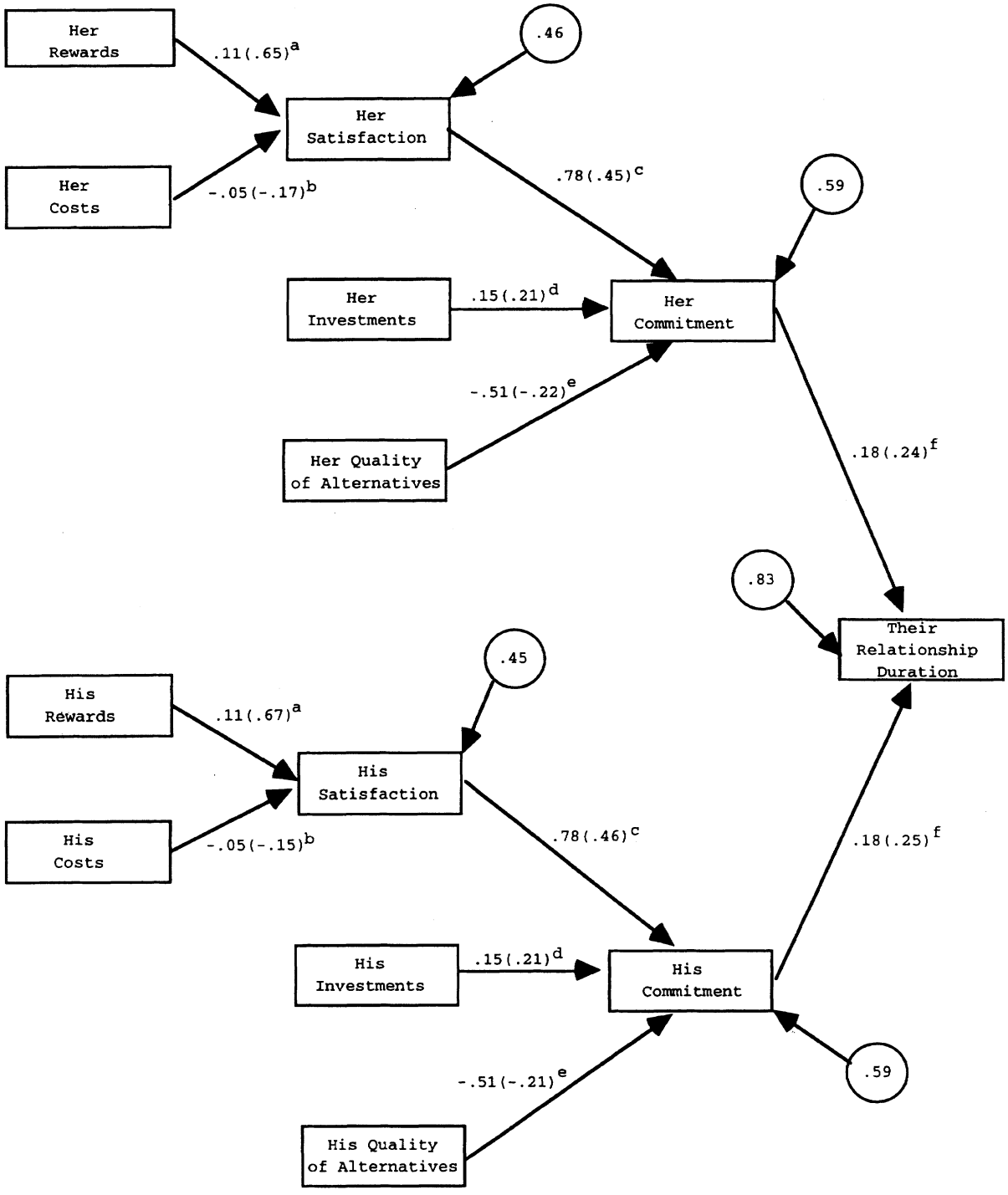

Figure 3 Examining gender differences in the Rusbult model using path analysis.
NOTE: The independent (exogenous) variables in this path model (her and his rewards, costs, investments, and quality of alternatives; the error variances for his and her satisfaction and commitment) were allowed to covary (i.e., the correlations were estimated as free parameters); for ease of reading, however, these correlations are not represented in this figure. Arrows represent regression paths. Circled numbers indicate the proportion of error variance in the variables to which they are attached. Paths with the same superscript (a, b, c, etc.) were constrained to be equal (as reflected in the unstandardized path coefficients). $\chi^2(42) = 106.07$, $p < .001$, CFI = .93. All path coefficients are significantly different from zero ($p < .05$). Standardized path coefficients are presented in parentheses. $N = 167$.

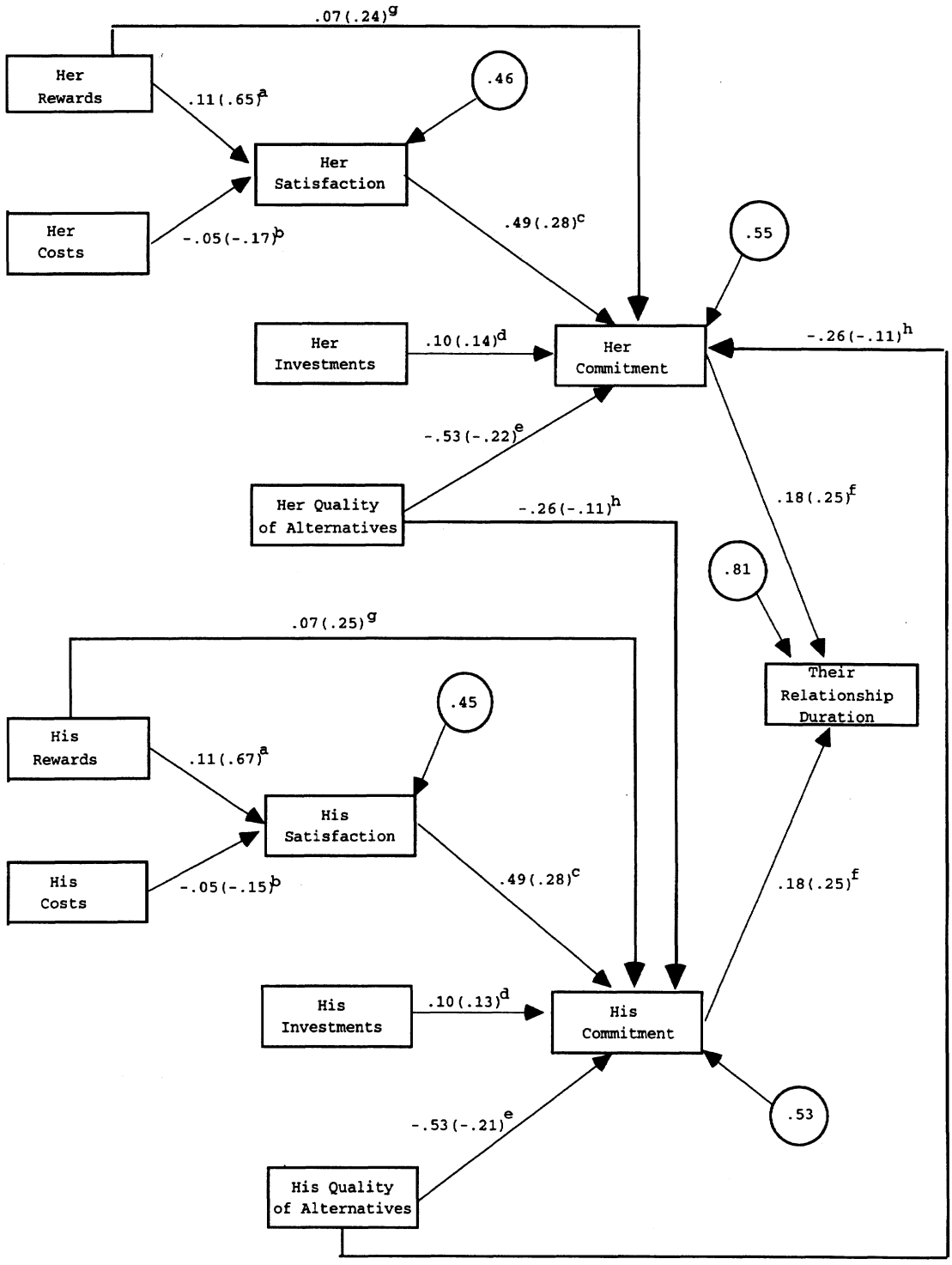

Figure 4 Expanding the Rusbult model with path analysis.
NOTE: The independent (exogenous) variables in this path model (her and his rewards, costs, investments, and quality of alternatives; the error variances for his and her satisfaction and commitment) were allowed to covary (i.e., the correlations were estimated as free parameters); for ease of reading, however, these correlations are not represented in this figure. Arrows represent regression paths; the lighter paths represent relations hypothesized in the Rusbult model, and the darker paths represent relations suggested by the data. Circled numbers indicate the proportion of error variance in the variables to which they are attached. Paths with the same superscript (a, b, c, etc.) were constrained to be equal (as reflected in the unstandardized path coefficients). $\chi^2(40) = 81.05$, $p < .001$, CFI = .95. All path coefficients are significantly different from zero ($p < .05$). Standardized path coefficients are presented in parentheses. $N = 167$.

CONCLUSION

The results of this research contribute to knowledge about personal relationships in several ways. First, we have provided a close examination of Caryl Rusbult's model of commitment and stability. Several of our findings provide strong support for Rusbult's model. Perhaps most important, the theory successfully predicted long-term relationship stability. Using path analysis, we showed that Rusbult's overall model provides a reasonable fit to our empirical data. We also showed that her model is equally applicable to women and men. We found supportive evidence for the direct effects predicted by Rusbult. Less clear support was found for the mediational components of Rusbult's model, in particular for the predictions that satisfaction mediates the effects of costs and that commitment mediates the effects of investments and quality of alternatives. Here, our findings, like those recently presented by Rusbult and Martz (1995), were mixed.

In addition, we attempted to expand Rusbult's analysis by examining empirical relations among variables not specified in her model (Figure 4). These results provided preliminary evidence for more complex patterns than those identified by Rusbult, such as the association between the quality of one person's alternatives and the partner's commitment. Dyadic effects such as this raise interesting questions for future studies. The scope of our dyadic analyses was restricted by investigating only concepts identified by Rusbult as relevant to commitment and relationship stability.

Two directions for future research seem especially valuable. Current tests of Rusbult's model are limited by having cross-sectional measures of predictor variables. A stronger test of the model and of Rusbult's mediational predictions would be provided by studies that assess variables at several time points, so that predicted sequential effects could be tested directly. Future research might also profitably undertake direct empirical comparisons of Rusbult's investment model and other models of commitment and stability that draw on a different set of constructs (e.g., Felmlee, Sprecher, & Bassin, 1991; Johnson, 1991; Levinger, 1976, 1991; Nock, 1995; Rusbult, 1991).

Finally, we have shown that it is possible to predict relationship stability over a relatively long time span (15 years), beginning in the early stages of dating and encompassing, for some couples, eventual marriage and divorce (see also Hill & Peplau, 1995). Roughly one quarter of the variance in the duration of relationships was explained by our predictors. Although relationships change and develop over time (Karney & Bradbury, 1995), some of the antecedents of long-term stability can be detected relatively early in premarital relationships.

NOTE

1. An alternative analytic approach would be to test whether commitment mediated the effects of satisfaction, investments, and quality of alternatives on relationship stability separately rather than simultaneously. This approach would determine whether commitment mediated the effects of each of the three predictors of commitment without including the other two predictors in the Baron-Kenny regressions. When analyses were conducted using this alternative method, the results were similar to those for the simultaneous mediation test reported in the text.

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